DOCUMENT RESUME

ED 249 497 CS 208 587

AUTHOR Sommers, Elizabeth A.; Collins. James L.
TITLE What Research Tells Us about Composing and Computing.
PUB DATE 29 Sep 84
NOTE 22p.; Paper presented to the Computer Educators League (Buffalo, NY, September 29, 1984).
PUB TYPE Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; *Computer Software; Elementary Secondary Education; Microcomputers; Prewriting; Research Opportunities; Revision (Written Composition); Teaching Methods; *Word Processing; *Writing Instruction; *Writing Processes; *Writing Research

ABSTRACT

Research about writing and the teaching of writing has demonstrated that writing is a process, that thinking and writing are inextricably connected, that workshop and tutorial methods are more efficient than teacher or textbook dominated instruction in writing, and that correctness does not have to be a major concern in the teaching of writing. Although computer assisted instruction for the language arts classroom is still in its infancy, researchers are already developing tools that help writers by interceding in writing processes. Effective prewriting programs, for example, offer the type of instruction trained teachers give in writing conferences. Research findings also confirm five important assets to word processing: (1) students often develop into more fluid writers; (2) revision is more intensive and varied, and is sustained over a longer period of time; (3) illegible handwriting is no longer an obstacle; (4) since they no longer have to recopy, students are more willing to revise; and (5) writers develop a deeper understanding of their writing processes. Other researchers are developing computer software to assist writers with locating and identifying errors. All of these research findings emphasize that microcomputers are helpful in classrooms when they are used integratively, with sound teaching methods, and that they are destructive when used out of context, without respect for the ways students learn to use language. (HOD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED249497

WHAT RESEARCH TELLS US ABOUT COMPOSING AND COMPUTING

Paper presented to the Computer Educators League, SUNY Buffalo
September 29, 1984

Elizabeth A. Sommers
James L. Collins

State University of New York at Buffalo

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
[ ] Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

We've been asked to talk about research in writing and word processing and about the meaning of this research for using computers in the teaching of writing. We'll divide our subject in half: Jim will discuss writing research, and Elizabeth will discuss word processing research. Please don't be misled by this division of labor; our emphasis throughout our presentation will be on integrating writing instruction and word processing.

The first page of the handout [attached] we've provided is a rough outline of the major points we want to cover, and it is also a bit of a commercial for our book, Writing On-Line: Using Computers in the Teaching of Writing, which is in press with Boynton/Cook. We'll lean heavily on chapters of the book in our remarks today.

The second and third pages [attached] show examples of writing instruction. Page two exemplifies responding to writing, and page three exemplifies assignment making. These pages will illustrate some of the ideas we discuss.

I want to establish a context for our remarks by telling two stories. The first one occurred early in our preparation of

CS308 587

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Elizabeth A. Sommers
James L. Collins
TO THE EDUCATIONAL RESOURCES

Writing On-Line. We were approached by a professor from another university who said, "I hear you're doing a book on writing and word processing. I teach word processing". We think she meant "I'd like to write a chapter for your book", but she said, "I teach word processing." For us, this is a confusion of tool and craft; it's like the woodworking teacher saying, "I teach table sawing". We prefer to keep the emphasis on writing, and that's what we'll do in these remarks.

My second story is about the way writing used to be taught. The year is 1962, one year before the NCTE report Research in Written Composition (Braddock, Lloyd-Jones & Schoer, 1963), judged by many writing researchers to mark the beginning of serious scholarship in writing and the teaching of writing. I'm in freshman composition back then, and we're using a grammar text, a literature anthology and Martin and Ohmann's Logic and Rhetoric of Exposition. These books define the course. We study correctness in mechanics and usage, and literary models for writing; we study logic for half the semester, practicing syllogisms and the like, and then we study rhetoric, practicing more syllogisms and the like. When we write, we sit isolated and quiet, we produce 500 word themes, and we all write at the same pace and about the same subjects. The audience for the writing is always the teacher, and the purpose of the writing is always to examine us. Writing is a test of what we know and how well we can record our knowledge in standard written English. We turn in typed copies of our first drafts, and the teacher marks them up and passes them back about a week later. The most memorable part of the semester for me (and finally the story I

want to tell) is when I admit to receiving help with an essay I wrote in imitation of Swift's "A Modest Proposal." The instructor accuses me of copying and lectures the class on plagiarism. Collaboration, in 1962, is tantamount to cheating.

Back then I was not surprised by any of this, perhaps because the writing instruction was very similar to what I had been taught in high school. The only real difference was in high school we hadn't typed our papers.

Today, though, I would be surprised by such teaching. We've learned a lot about writing and the teaching of writing since 1962, and I'll next discuss some of the highlights of this learning.

We've learned that writing is a process, in the sense of a continuum of overlapping and recursive stages (Emig, 1971; Perl, 1979; Graves, 1983) . The focus in composition research and teaching has shifted from product to process. Studies of writing processes show "stages", such as generating ideas, shaping and connecting thought and language, revising by adding and deleting and developing, and editing, and the studies also show writers moving back and forth rather constantly between these stages. Gone are the notions that writers produce typed copies of first drafts and that teachers look at the writing only after it has been turned in for a grade. Instead, we now believe writers produce several drafts (except when the writing is routine and automatic) and that teachers can help during the process of forming these many drafts of the writing.

We've learned also that thinking and writing are inextricably

connected during writing processes. Indeed, we now believe that writing is a mode of thinking and learning. Studies of cognitive processes involved in writing (Vygotsky, 1934/1962; Flower,1979; Flower and Hayes, 1980; Bereiter and Scardamalia, 1982) show writers actively involved in constructing meaning. From the first dim stirring of an idea to the publishing of a full and well-formed text, writing involves discovering, organizing, developing thought. Thought is shaped and made communicative by language, and language is learned as it is used to give form to thinking. This is quite the opposite of the "logic and rhetoric" position of teaching them to think, then teaching them to write. Thinking and writing are inseparable.

We've learned that workshop and tutorial methods (Murray, 1968; Moffett, 1968; Garrison, 1981; Collins and Moran, 1982; Graves, 1983) are more efficient than teacher or textbook dominated instruction in writing. Oral response during the writing process, conferring with individual writers about their writing while the writing is being produced, is more helpful than theme annotation after the writing is done. Collaboration is not cheating; indeed it is a good synonym for learning. Most of what we learn is learned in cooperation with others, and writing is no exception. The most useful thing teachers can do for writers, regardless of their ages or abilities, is to provide audiences for their writing, audiences who will read and respond in supportive and helpful ways.

We've learned also that correctness does not have to be a major and initial concern in the teaching of writing. Most errors in writing are systematic rather than careless; they show

up for good reasons (Graves, 1983; Shaughnessy, 1977). The writer, for example, who confuses to, too, two is relying on sound rather than sense as a guide to spelling. Similarly, the writer who confuses the four "add a final s rules" which operate in standard written English (s for subject verb agreement, s for plural formation, 's for possession, and 's for contraction) does so because she speaks a dialect which tends to drop the final s. In both examples, the transformation of thought into witten language has stopped at the level of spoken language. Now, there is nothing wrong with that; we all tend to resort to talk when the writing gets tough. Talk can be a way out of writing difficulties, and at the editing stage of writing processes we can help by conferring with writers, talking with them about one problem at a time.

We've learned, furthermore, that academic writing is not all there is, and that the purposes and functions of writing can, and should, vary (Britton, Burgess, Martin, McLeod & Rosen, 1975; Applebee, 1981). A high school writer recently told me he wrote for repair parts for his very expensive car stereo and received a form letter in response telling him he'd have to return the radio to the factory for repairs. He wrote again, this time being less polite -- he said it would be stupid and a waste of money to return the radio when he could fix it himself. He got his parts. The curious thing about this report is the writer has twice failed the New York State Competency Test in Writing, and part of that test asks for a business letter very much like the successful ones he writes out of school. Why is he a better

writer outside of school? In the radio example he's writing about an important subject to a real audience; he also told me he wrote the letter, showed it to his sister and then his parents, and revised according to their advice. Collaboration again.

In all of these insights into writing and the teaching of writing there is one common thread: Whenever possible writing instruction should be individualized. There is very little we can say to a classroom full of writers to help them improve their writing. Instead, we ought to have them write, and we should talk with each of them about the writing while it's being produced. The handout [attached] illustrates methods of individualizing assignment making and responding to writing. Word processing fits quite nicely with individualized instruction in writing, and Elizabeth will now discuss how.

I'll continue our talk this morning with a discussion of four points we feel are essential in using microcomputers in language arts classrooms. Next, I'll tell you what researchers find are the characteristics of good computer-assisted software for the English classroom. I'll discuss research on computer-assisted prewriting, word processing and editing, and I'll talk about some interesting work being done in reading and literature classes using word processing.

All of the principles which are true when we don't use microcomputers are also true when we do use them in our classrooms to help our students learn how to write and read. Preliminary research shows that microcomputers can be very valuable in our curricula if we bear in mind four important points (Sommers, in Writing On-Line):

1) The writing teacher is indispensable as collaborator and audience, as facilitator and assignment-maker. Microcomputers alone cannot teach writers why revision is important, or how to bring a first draft to full meaning. Nor can currently available software read and respond to student writing on any satisfactory level. As technology evolves this will continue to be true.

2) Writers learn best when writing is taught as a process in decentralized classrooms. In doing so, the conference method of instruction is most valuable as a primary mode of instruction. Computer-assisted instruction can help, but cannot take over the central roles played by writers and respondents.

3) The microcomputer is most valuable as a writing tool enhancing our writers' abilities to explore, to articulate and to reshape. Whatever the part of the writing process emphasized, teachers should be aware that writers learn to write holistically, and microcomputer uses should enhance this holistic sense of discourse.

4) Microcomputers are counter-productive when used in a theoretical vacuum. We need to use great care when we integrate microcomputers into our classrooms. This means we avoid software which concentrates exclusively upon subskills or isolates them prematurely. We also avoid software which neglects or fragments the holistic processes involved in writing. And very importantly, we avoid software which teaches mechanical subskills instead of teaching writing.

We reject these unsound microcomputer uses for the same reasons we reject other unsound teaching practices. They don't

teach writers how to write. For example, a study of four thousand community college students using PLATO, a comprehensive collection of drill and practice programs, concluded that PLATO had no definite positive effects on learning (Alderman, Appel & Murray, 1978). Teachers need to be critical of the many drill and practice programs now on the market, and we should use them with discrimination, if at all.

Microcomputers do have exciting possibilities as writing tools if they are used well. The problem is separating the many ineffective uses from the good ones, and once teachers know what to look for, this isn't difficult. Good computer-assisted instruction programs are integrative, interactive and individualized, and they are easy to operate and user-friendly.

Although CAI for the language arts classroom is still in its infancy, researchers are already developing tools which help writers by interceding in writing processes, the most promising and pedagogically sound approach. Prewriting programs, for example, can help writers to creatively explore subjects. According to James Strickland, a researcher and teacher who wrote our chapter on prewriting for Writing On-Line, prewriting is an often neglected area of writing instruction. Computer-assisted instruction can already help with the planning involved in prewriting. First of all, students receive the extra time and help they need - and nothing is theoretically more patient than a microcomputer and a floppy disk.

Effective prewriting programs offer the type of instruction trained teachers give in writing conferences. This help, according to Strickland, can take the form of directing

creativity, suggesting strategies, acting as audience, and helping to dislodge writer's block.

Prewriting programs are designed to help writers in many different ways. Writers might answer questions about a given topic, generate a list about their subject, freewrite, think about their audience and purpose, and so on. All good prewriting programs are similar in some senses: They individualize instruction through branching, they give options not available without microcomputers, and they are interactive, using responses to the user which are as close as possible to those a caring, trained teacher can offer.

Bad prewriting programs also have similar qualities. Most of them focus on surface concerns, with atomistic problems taking precedence over holistic discourse concerns. These programs present the writing process as linear, a view most researchers agree is too simplistic. Finally, ineffective prewriting programs try to teach writing strategies as content, giving no direction to writers who need to learn to employ problem-solving strategies in their own writing. (Strickland, in Writing On-Line).

Many writing teachers and researchers have focussed on word processing as one of the most valuable uses of microcomputers in the writing classroom. Gail Womble, one of our chapter authors and a high school teacher, finds five important assets to word processing (Womble, in Writing On-Line): 1) students often develop into more fluid writers; 2) revision is more intensive and varied, and is sustained over a longer period of time; 3)

illegible handwriting is no longer an obstacle, allowing writers to focus on the more important business of revisions; 4) since they no longer have to recopy, students are more willing to revise; and 5) writers develop a deeper understanding of their writing processes.

These are persuasive reasons to use word processing in the classroom. Shirlee Lindemann and Jeanette Willert, also authors in Writing On-Line, confirm these findings. In addition, they find that word processing encourages students to collaborate with others to improve ideas and wording. They observe much more interaction than before using word processing in their classrooms.

As we discussed earlier, individual student-teacher conferences are crucial to our work as writing teachers. Willert, Lindemann and other teachers report being able to do more conferring when using microcomputers than in the past. Beginning with prewriting and continuing through the entire writing process, they offer concerned and individualized response in the form of comments, questions, and suggestions. First content, then organization and then sentence and word level problems are dealt with, one concern at a time through a series of drafts.

Some of the researchers and teachers who wrote for Writing On-Line observed how irrevocably microcomputers decentralize the writing, reading and literature classrooms. This is positive in itself: to reiterate, research shows students learn to write most effectively through one-on-one conferences with the teacher. Peer collaboration, audience response and workshop atmosphere

help too, and classroom teachers working with microcomputers often set up separate instructional situations with all of these activities and more happening in the same classroom at the same time. Microcomputers are helpful both as writing tools and as catalysts for other positive kinds of classroom reorganization.

Our chapter authors made only one universal observation: microcomputers are no panacea. Every English researcher and teacher should be aware of this. As Lindemann and Willert explain, computer problems are many: not enough equipment, mechanical breakdowns, loss of files. Teachers' jobs get harder, not easier. Teachers need to learn how to use microcomputers, select software, train students, plan for writers not using microcomputers, and teach writers to respect one another's privacy. And not a single bit of research tells us yet that writing quality improves when word processing is used for instructional purposes. These points are worth some serious thought.

In addition to prewriting and word processing programs, editing programs are readily available to English teachers and our students. In fact, most programs available today are drill and practice programs teaching punctuation, usage, spelling or grammar. Unfortunately, these programs don't really teach writers how to write.

More sophisticated editing programs emphasize text analysis instead of drilling writers. For example, programs can gauge the maturity of a writer's word choice (Finn, 1977); find certain kinds of mistakes (Breininger & Portch, 1983); point out omitted

material in journalism articles; and generate statistics about the writer's text (Wresch, 1983). The Writer's Workbench, for example, is comprised of software programs providing many kinds of text feedback, but it is not designed primarily for the composition classroom (Bridwell, 1984).

Some programs attempt to help writers learn how they make mistakes, taking a holistic view of writing, and these are the most promising. Glynda Hull and William Smith, researchers at the University of Pittsburgh, write in Writing On-Line of their efforts to teach writers effective editing processes (Hull & Smith, in press). Instead of identifying errors for students, they give writers the responsiblity of locating and identifying errors. Hull and Smith are developing computer software to assist with this approach to error intervention. Writers are given text to correct, and the program is able to determine whether the response is accurate. The program also highlights mistakes the student does not see.

This research team believes students learn to model the activity of editing by using their software, but that students learn to edit best in the context of their own papers. The primary aim of their work is to develop subsequent programs which will help students detect errors in their own texts. They offer several important guidelines for teachers selecting from among currently available commercial programs: 1) select programs which teach students to make corrections rather than programs which make automatic corrections; 2) separate questions of style from questions of correctness; and 3) avoid programs which use grammatical terminology to explain why something is wrong.

Students usually don't know what the past perfect is, and telling them doesn't help them corect their mistakes.

I've concentrated so far today on some promising uses of microcomputers in writing classrooms. Language arts teachers should be aware too of the exciting uses teachers are making of word processing in teaching reading and literature. Linda Bickel, a chapter author for Writing On-Line who teaches reading in middle school, uses a cycle of reading and writing with peer feedback and writing conferences to help her writers read and write more successfully. She found her students were more motivated when working with word processing - an observation shared by every computer-using teacher we've encountered. Bickel also found her students were keenly interested in reading what other students had written and more critical of their own efforts. Finally, she observed chat reading comprehension improved with writing development.

Working at the college level, John Evans found similar patterns in his literature class. As he explains, "all of the language arts activites of reading, writing, speaking and listening revolved around the literature the class read and the responses written at the microcomputer. The literature and the writing were at the center of students' activities." Evans found students more willing to experiment with language, less anxious, more willing to examine their responses to literature in depth and more willing to share their responses with a group than in classes he taught without word processing (Evans, in Writing On-Line).

Conclusions about computers in our language arts classrooms are almost impossible to make at such an early date. But the work of the earliest researchers and teachers is interestingly consistent. Microcomputers are helpful in our classrooms when they are used integratively, with sound teaching methods. They are destructive when they are used out of context, without respect for the ways students learn to use language. This is reassuring. As English teachers, we see that we need to continue to teach i- the best ways we know, using the microcomputer as a tool rather than as magic.

References

Alderman, D. L., Appel, L. R., & Murray, R. T. (1978). PLATO and TICCIT: An evaluation of CAI in the community college. Educational Technology, 18, 40-44.

Applebee, A. N. (1981). Writing in the secondary school. NCTE Research Report No. 21. Urbana, Il: National Council of Teachers of English.

Bereiter, C. & Scardamalia, M. (1982). From conversation to composition: The role of instruction in a developmental process. In R. Glaser, Ed., Advances in instructional psychology (Vol. 2). Hillsdale, NJ: Lawrence Erlbaum.

Braddock, R., Lloyd-Jones, R. & Schoer, L. (1963). Research in written composition. Urbana, IL: National Council of Teachers of English.

Breininger, L. J. & Portch, S. (1983). A visit to Professor Cram: Attractive computer learning. College Composition and Communication, 34, 358-361.

Bridwell L. (1984). The writing process and the writing machine: Current research on word processors relevant to the teaching of composition. In R. Beach and L. S. Bridwell (Eds.), New Directions in Composition Research (pp. 381-398). New York: The Guilford Press.

Britton, J., Burgess, T., Martin, N. McLeod, A. & Rosen, H. (1975). The development of writing abilities (11-18). London: Macmillan Education.

Collins, J. L. & Moran, C. (1982). The secondary level writing

laboratory: A report from the field. In M. Harris (Ed.), Tutoring writing: A sourcebook for writing labs. New York: Scott Foresman.

Collins, J. L. & Sommers, E. A. (in press). Writing on-line: Using computers in the teaching of writing. Montclaire, NJ: Boynton/Cook.

Emig, J. (1971). The composing processes of twelfth graders. Urbana, IL: National Council of Teachers of English.

Finn, P. (1977). Computer-aided description of mature word choices in writing. In C. R. Cooper and L. Odell (Eds.), Evaluating Writing (pp. 69-89). Urbana, Il: National Council of Teachers of English.

Flower, L. S. (1979). Writer-based prose: A cognitive basis for problems in writing. College English, 41, 19-37.

Flower, L. & Hayes, J. R. (1980). The cognition of discovery: defining a rhetorical problem. College Composition and Communication, 31, 21-32.

Garrison, R. (1981). How a writer works. New York: Harper and Row.

Graves, D. (1983). Writing: teachers and children at work. Exeter, NH: Heinemann Educational.

Moffett, J. (1968). Teaching the universe of discourse. Boston: Houghton Mifflin.

Murray, D. M. (1968). A writer teaches writing. Boston: Houghton Mifflin.

Perl, S. (1979). The composing processes of unskilled college writers. Research in the Teaching of English, 13, 317-336.

Shaughnessy, M. P. (1977). Errors and expectations: A guide for the teacher of basic writing. New York: Oxford University Press.

Vygotsky, L. S. (1962). Thought and language. (E. Hanfmann & G. Vakar, Eds. and Trans.) Cambridge, MA: M.I.T. Press. (Original work published 1934)

Wresch, W. (1983). Computers and composition instruction: An update. College English, 45, 794-799.

What Research Tells us About Composing and Computing

These principles are from Writing On-Line: Using Computers in the Teaching of Writing, edited by James L. Collins and Elizabeth A. Sommers.

Teaching Writing

1. Writing is a process and its stages are continuous, overlapping and recursive, not discrete and linear.

2. Writing is an activity, not a subject or body of knowledge. Writing is learned by writing practice, and by reading, talking and listening -- but not by listening to teacher lectures, since these exercise teacher language abilities.

3. Writing involves connecting inner worlds of motivation and thought with outer worlds of language and experience. The key to writing is making these connections and revising them.

4. Writing conventions are fixed and inviolable, but teaching writing is not the same as teaching writing conventions and error correction. Meaning comes before conformity to conventions of written language.

Using Word Processing

1. Integrate word processing within stages of the writing process. Use software designed to help writers with a broad range of writing activities -- prewriting, drafting, revising, and editing -- while recognizing the recursive and idiosyncratic nature of writing processes.

2. Avoid drill and practice software programs emphasizing subskills such as mechanics and usage. These teach something, such as linguistic etiquette, but they don't teach writing.

3. Emphasize revision, since this is the key to writing and the major strength of word processing. Teach writers to revise for content and organization, then for sentence and word level problems.

4. The value of word processing is that it helps individualize instruction within groups of writers.

James L. Collins
SUNY/Buffalo
553 Baldy Hall
Buffalo, New York 14260

An Individualized Program in Writing

Student/Writer	Teacher/Editor
	The teacher makes the assignment (see attached list).
Student selects a subject.	Teacher helps student focus subject, choose between different possible subjects, eliminate subjects which are unlikely to succeed, and helps clarify audience, purpose, voice.
Student makes a list of specific details about the subject.	Where applicable, the teacher presses the student to say more and to be more specific; if a particular list isn't going anywhere, the teacher encourages the student to try another subject.
Student organizes the list into groups.	The way the student chooses to group the specifics is usually the general plan of the essay although both student and teacher should remain flexible about the exact order of groups, what will be dropped or kept, where the essay will begin and end, etc., At this stage the student should sense what details belong with other details and generally where the essay is going.
Student's first draft based on the organized list.	The writer should be allowed to put the draft together with relatively little intervention from the teacher. The teacher should ignore ungrammatical sentences, poor word choices and misspelled words at this stage. Encourage the student to get the ideas down on paper without worrying about mechanics.
Student finishes first draft. Student rewrites (and rewrites) if content and/or form need improvement.	In the first reading of the whole essay the teacher should read only for content: Is the essay full enough? Should something be developed more? When questions of content are settled, the teacher should then check for overall form: Is the writer's logic discernible and appropriate?
Writer works on each type of sentence problem and then each type of word problem--one problem at a time. Writer produces final (usually a third or fourth) draft of the writing.	If the content and overall organization of the essay are acceptable the teacher then can focus on sentence problems, spelling, word choices, matters of style.

Sample Series of Assignments

Description	#1 An object	#2 A room	#3 A person	#6 A neighborhood one you know well	A pet	A place
Narrative	#4 Something that happened to you	#5 Something you saw happen	Summarize a story you've read	Summarize a television story		
Explanation - - - - - - - - - - Process	#7 How to do something	#8 How something works	#9 Why you did (or do) something	How to get from your house to school	How something is made or manufactured	
Interpretation	#10 A picture from Stop, Look, and Write	#11 Reading	A film	Compare 2 pictures or 2 readings	A cartoon	
Persuasion	#12 Someone to your opinion	Someone to a course of action	Someone to disagree with an editorial			
Voice	Children's Story	Voice that is not your own	A business letter			
What do you think about	Subject based on research	Subject based on news	A politician	A law or regulation	An event you witnessed	
Self-Assignment						